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Understanding coherence of Nitrogen nuclear spin in NV centers MO CHEN, WON KYU CALVIN SUN, JEAN-CHRISTOPHE JASKULA, KASTURI SAHA, PAOLA CAPPELLARO, Massachusetts Inst of Tech-MIT — The native nitrogen nuclear spin in nitrogen-vacancy (NV) center proves a useful resource for quantum information storage and coherent feedback control. However, its T2 coherence time falls much shorter than the T1 relaxation time, due to interactions with the NV electronic spin. NV electronic spin flips due to T1 process, which acts as a random telegraph noise (RTN), dephasing the nitrogen nuclear spin. Here we study this decoherence process, comparing experiments with the RTN model, and show the efficiency of harnessing dynamical decoupling to fight against such noise.

Mo Chen Massachusetts Inst of Tech-MIT

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